



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 11 1993

MEMORANDUM

OFFICE OF
AIR AND RADIATION

TO: All Regional Air Division Directors

SUBJECT: Oxygenated Gasoline Issues in Fairbanks, AK

FROM: Mary T. Smith, Director
Field Operations and Support Division

As you may have heard by now, Governor Walter Hickel of Alaska has temporarily suspended the oxygenated gasoline program in the city of Fairbanks. This decision was made on Friday, December 11, with the knowledge of EPA officials in Region X and here in Headquarters (see attached press release). This temporary suspension does not relieve Alaska of the responsibility for implementing an oxygenated fuels program in Fairbanks.

Prior to the decision, Region X and my staff worked closely with the State of Alaska to allay concerns raised by a very vocal segment of the citizenry of Fairbanks. Unfortunately, despite the proven track record of oxygenates in the seven existing programs, we were unsuccessful. The concerns of Fairbanks related to a fourteen-cent increase in the price of gasoline, CO reductions at arctic temperatures and perceived health and driveability problems at these very low temperatures. It is our belief that the strong negative reaction in Fairbanks was precipitated by the large price increase. Too late to remedy the situation there, we have seen prices drop in Alaska as the marketplace has begun to normalize.

While EPA continues to believe that oxygenates are an effective means of reducing CO emissions and overall toxic pollutants, EPA has agreed to collect data aimed at addressing the effects of oxygenates at arctic temperatures. We aim to complete this study before the 93/94 oxygenated fuels season begins. Attached is an issues paper prepared by our office and Region X which discusses the various issues raised in Fairbanks. If you or your staff have any questions, please contact me at (202) 233-9000 or Al Mannato of my staff at (202) 233-9308. I also encourage you to contact me if any similar issues arise in any of your Regions so that we can work together to address them expeditiously.





United States
Environmental Protection
Agency



Alaska
Department of
Environmental Conservation

Oxygenated Gasoline in Alaska Information Bulletin

December 29, 1992

This oxygenated gasoline information bulletin has been prepared by the United States Environmental Protection Agency (EPA) and the State of Alaska Department of Environmental Conservation (ADEC). We are committed to providing all available information in order to better address your concerns about the use of oxygenated gasolines in Alaska. All the documents referenced in this bulletin are available for review at the DEC office in Anchorage. The office address is 3601 C Street, Suite 1324.

The EPA is currently working closely with State and other government officials in Alaska to evaluate the current information. Both EPA and the State are continuing to assess the oxygenated gasoline program in Alaska, and appreciate the input of concerned citizens. If you have any questions or concerns, please contact your local State office for information.

Why Does Anchorage Have to Use Oxygenated Fuels?

In November of 1990, Congress passed amendments to the nation's Clean Air Act (the Act). The goal of those amendments is to improve the quality of the air all of us breathe every day. Section 211(m) of the Clean Air Act is concerned with carbon monoxide pollution. Thirty-nine cities throughout the country currently have levels of carbon monoxide (CO) in their air which exceed the National Ambient Air Quality Standards. Section 211(m) of the Act requires all states with cities that violate the CO standard to implement winter oxygenated gasoline programs this year. Anchorage is one of the 39 cities that is required to implement the program.

The Act requires oxygenated gasoline to be used in specific geographic areas during that portion of the year in which the areas are prone to high ambient concentrations of CO. The length of these control periods have been established by the EPA Administrator. The Act generally requires a 4 month period. Alaska's program will run from November 1 through February.

What Is the Benefit to Using the Fuel?

Oxygenated gasoline reduces levels of ambient carbon monoxide pollution. EPA has extensively documented the detrimental health effects of carbon monoxide on people. Carbon monoxide enters the bloodstream and reduces the delivery of oxygen to the body's organs and tissues. EPA studies show that carbon monoxide pollution may lead to loss of visual perception and alertness, dizziness, headaches and confusion. High levels of CO are particularly dangerous for elderly people, small children and people with asthma, pulmonary or cardiovascular diseases.

Oxygenated gasoline has been extensively tested by the auto and oil industries and the government and proven to reduce CO emissions from vehicles. Oxygenated gasolines have been used in Denver, Las Vegas, Reno, Phoenix, Albuquerque and Tucson since the late 1980's. Last winter in Colorado, carbon monoxide emissions from motor vehicles were cut by 23% through the use of oxygenated gasolines (source: "1992 Oxygenated Gasoline Program: Air Pollution Control Division Report to the Colorado Air Quality Control Commission", Colorado Department of Health, May 21, 1992).



Are There Other Health Benefits Or Health Effect Concerns Associated With Using the Fuel?

Oxygenated gasoline, such as gasoline blended with methyl tertiary butyl ether (MTBE), is used to reduce levels of ambient carbon monoxide pollution. In addition to reducing carbon monoxide, oxygenates in gasoline will also reduce consumer exposure to toxic pollutants from motor vehicles, since oxygenates are used as octane-enhancers. This substitution allows refiners to remove more harmful substances from gasoline blends in favor of oxygenates.

All automobiles, regardless of the type of fuel, will emit formaldehyde, benzene, and 1,3-butadiene. These emissions may be altered when MTBE is added, as shown in Table 1.

**Table 1:
Air Toxic Emissions**

Pollutant	Emissions Without MTBE	Emissions With MTBE	% Change
Benzene	6.8-17.3 mg/mile	6.05-15.4 mg/mile	-11
1,3-Butadiene	0.51-1.4 mg/mile	0.51-1.4 mg/mile	0
Formaldehyde	1.1-3.3 mg/mile	1.3-3.9 mg/mile	+18

The use of oxygenates changes the ratio of these toxics. Generally speaking, the use of MTBE in a 15% blend reduces overall evaporative and exhaust emissions of these toxics, primarily through the substitution of an oxygenate for benzene and other aromatics. While benzene emissions are reduced by 11%, 1,3-butadiene is unchanged, and formaldehyde levels increase approximately 18%, as indicated in Table 1. While it is true that the percentage of formaldehyde emissions increases, the total weight of formaldehyde emissions is still far less than the total weight of the benzene emissions. Table 1 demonstrates that with both types of fuel, benzene emissions are much larger than formaldehyde emissions in terms of total weight. In summary, there is a net decrease in the mass of these air toxics emissions from the use of oxygenated fuels.

The EPA has classified these chemicals based on the weight of scientific evidence regarding their cancer potential. Benzene is classified as a proven human carcinogen and 1,3-butadiene, formaldehyde, and gasoline are classified as probable human carcinogens. The cancer potency of benzene is about the same as that of formaldehyde. In conclusion, the decreased cancer risk resulting from the reduction in benzene emissions is expected to more than offset any added cancer risks from increased formaldehyde emissions.

Formaldehyde can cause acute, noncancer effects. Irritation of the eyes, nose, and throat is the most common effect observed in humans from short-term exposure to formaldehyde and can be observed at exposure levels as low as 0.1 mg/m³. Short-term exposures to 3 or 4 mg/m³ do not produce symptoms of lung effects. Formaldehyde exposure has been linked with a number of behavioral and physiological effects such as thirst, dizziness, headache, and apathy. Residents of homes in which formaldehyde concentrations ranged from 0.06 to 0.6 mg/m³ have reported these symptoms along with an inability to concentrate and sleep. Tolerance to low levels of formaldehyde can occur in individuals after 1-2 hours of exposure, but symptoms can return if exposure is interrupted and then resumed.

Automobiles are not the most common source of our day-to-day formaldehyde exposure. The major formaldehyde exposure risk is from indoor rather than outdoor pollution. Concentrations of formaldehyde found in homes, offices, factories and schools are generally much higher than those found outside. As Table 2 shows, only 9% of the total formaldehyde exposure an average person receives is from automobile emissions:

